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Flipped Classroom Teaching and Learning Pedagogy in the Program Planning, Implementation, and Evaluation Graduate Course: Students' Experiences

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Abstract: This article provides support to flipped-classroom pedagogy in the preparation of graduate-level public health practitioners. We describe the participatory, interactive, collaborative, and liberating process of teaching and learning in the Program Planning, Implementation, and Evaluation course, and provide the results of a cross-sectional study into students' perceptions of this process. Our investigation found a significant positive correlation between students' participation in class discussion (PCD) and classroom learning experiences (LE) [Pearson, r (49) = .40, p = .004]. Study results confirm the students' appreciation for the flipped classroom pedagogy. However, the results indicate no significant correlation between the students' learning style preferences (LSP) and participation in class discussion [t (46) = -0.94, p = .34] or classroom learning experiences [t (46) = 1.64, p = .11]; likewise, there were no significant correlations between students' academic achievement (GPA) and participation in class discussion [Spearman's rho correlation: rsp (49) = .07, p = .60] or classroom learning experiences [Spearman's rho correlation: rsp (49) = .17, p = .25]. No significant association was found between both PCD and LE with demographic variables such as gender, age, semester in school, and type of employment. The current flipped classroom pedagogy allows for participation, growth, and development of all students enrolled in the course. We recommend more studies to further strengthen current evidence of the effectiveness of the flipped classroom pedagogical approach on both teaching and learning in public health courses.

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APPENDIX A

CLASSROOM EXPERIENCES: A STUDENT QUESTIONNAIRE

Students' Learning Style, Participation in Class Discussion, and Learning in Program Planning, Implementation and Evaluation Class

Please read all instructions carefully. Do not put any marks on this questionnaire that could identify you. The survey is anonymous. Please mark your answers clearly.

Section I: This section asks about **your participation in class discussions** over the past semester in the Program Planning, Implementation and Evaluation class. Please use the following scale to indicate the degree to which you agree or disagree with each statement: **Often (4); Sometimes (3); Rarely (2); Never (1).**

Circle your response for each item.

	Often	Sometimes	Rarely	Never
1. Class discussions were the primary way of communication between the teacher and students, and among students.	4	3	2	1
2. I participated in class discussions by asking questions.	4	3	2	1
3. I participated in class discussions to further explain unclear ideas to people in class.	4	3	2	1
4. I participated in class discussions to seek clarification about confusing ideas.	4	3	2	1
5. I did not participate in class discussions because I prefer to think things through before I speak.	4	3	2	1
6. I participated in class discussions to stimulate new ideas.	4	3	2	1
7. I felt encouraged to ask questions to better understand the content that we studied.	4	3	2	1
8. I felt encouraged to disagree with others to better understand the content.	4	3	2	1
9. I did not feel comfortable asking explanations about confusing ideas.	4	3	2	1
10. I actively participated in summarizing class discussions.	4	3	2	1
11. I participated in drawing conclusions from class discussions.	4	3	2	1
12. I contributed counterexamples to class discussions.	4	3	2	1
13. I did not feel comfortable participating in class discussions.	4	3	2	1

	Often	Sometimes	Rarely	Never
14. I participated during class discussions because I felt the need to verbalize my thoughts.	4	3	2	1
15. I participated in class discussions by non-verbal means (e.g., nodding, shaking head)	4	3	2	1

Section II: This section asks about the **way you learned** in your Program Planning, Implementation and Evaluation class over the past semester. You will be asked to complete 12 sentences that describe learning. Each has four endings.

Directions: Using the spaces provided, **write 4 next** to the sentence ending that describes how **you learned *best*** and so on down **to 1 for** the sentence ending that seems ***least*** **like** the way in which you learned. **Be sure to rank order all the endings for each sentence. Do not make ties. Please see the example.**

Hint: Some people find it easiest to decide first which phrase ***best*** describes them (4) and then to decide which phrase is ***least*** like them (1). Then they give 3 to that phrase in the remaining pair that is most like them (3) and a 2 to the phrase that is left over (2).

Example:

When I learn	2	4	1	3
	I am happy	I am careful	I am fast	I am logical

1. When I learn

_____	_____	_____	_____
I like to deal with my feelings	I like to think about ideas	I like to be doing things	I like to watch and listen

2. I learn best when

_____	_____	_____	_____
I listen and watch carefully	I rely on logical thinking	I trust my hunches and feelings	I work hard to get things done

3. When I am learning

_____	_____	_____	_____
I tend to reason things out	I am responsible about things	I am quiet and reserved	I have strong feelings and reactions

4. I learn by

_____	_____	_____	_____
feeling	doing	watching	thinking

5. When I learn

_____	_____	_____	_____
I am open to new experiences	I look at all sides of the issue	I like to analyze things, break them down into their parts	I like to try things out

6. When I am learning

_____	_____	_____	_____
I am an observing person	I am an active person	I am an intuitive person	I am a logical person

7. I learn best from

_____	_____	_____	_____
observation	personal relationships	rational theories	a chance to try out and practice

8. When I learn

_____	_____	_____	_____
I like to see results from my work	I like ideas and theories	I take my time before acting	I feel personally involved in things

9. I learn best when

_____	_____	_____	_____
I rely on my observations	I rely on my feelings	I can try things out for myself	I rely on my ideas

10. When I am learning

_____	_____	_____	_____
I am a reserved person	I am an accepting person	I am a responsible person	I am a rational person

11. When I learn

_____	_____	_____	_____
I get involved	I like to observe	I evaluate things	I like to be active

12. I learn best when

_____	_____	_____	_____
I analyze ideas	I am receptive and open-minded	I am careful	I am practical

Section III: This section asks about **your learning experiences** in the Program Planning, Implementation and Evaluation class over the past semester. Please use the following scale to indicate the degree to which you agree or disagree with each statement:
Agree Strongly (4); Agree Somewhat (3); Disagree Somewhat (2); Disagree Strongly (1)

Circle your response for each item.

	Agree Strongly	Agre Somewhat	Disagree Somewhat	Disagree Strongly
1. This class experience prepared me better for field-work than the traditional lecture-type classes.	4	3	2	1
2. This class experience improved my confidence in speaking in the large group.	4	3	2	1

	Agree Strongly	Agre Somewhat	Disagree Somewhat	Disagree Strongly
3. This class experience improved my ability to collaborate with other students.	4	3	2	1
4. This class experience helped improve my ability to communicate with other students.	4	3	2	1
5. This class experience helped improve my confidence in communicating with the instructor.	4	3	2	1
6. This class experiences did not change my interest in learning about public health.	4	3	2	1
7. This class experience did not improve my ability to collaborate with other students.	4	3	2	1
8. This class experience did not change my perception about learning through discussion.	4	3	2	1
9. This class experience did not improve my confidence in communicating with the instructor.	4	3	2	1
10. This class experience improved my skills in conducting independent research on a topic.	4	3	2	1
11. This class experience increased my interest in learning about public health.	4	3	2	1
12. This class experience decreased my anxiety in approaching class assignments.	4	3	2	1
13. This class experience changed my perception about learning in a group process.	4	3	2	1
14. This class experience did not change my ability in completing individual assignments in this class.	4	3	2	1
15. This class experience decreased my confidence in collaboration with other students in this class.	4	3	2	1
16. This class experiences helped me learn the course content better than the traditional lecture-type classes.	4	3	2	1
17. This class LibGuides were very helpful for completing the assignments.	4	3	2	1

Section IV: This section asks more about you. Please place an **X** on the line next to appropriate answers or fill in an answer.

1. What is your semester in the Program?

___ Second ____Third ____Fourth ____Fifth

2. You are a ___ Part-time ___ Full-time student.

3. Your Grade Point Average (GPA): ___ (<3.0) ___ (3.0-3.5) ___ (3.5-4.0)

4. What is your racial/ethnic background?

____ *Black, non-Hispanic*: a person having origins in any of the black racial groups of Africa (except those of Hispanic origin).

____ *American Indian or Alaskan Native:* a person having origins in any of the original peoples of North America who maintains cultural identification through tribal affiliation or community recognition.

____ *Asian or Pacific Islander*: A person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or Pacific Islands. This includes people from China, Japan, Korea, the Philippine Islands, American Samoa, India, and Vietnam.

____ *Hispanic*: A person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.

____ *White, non-Hispanic*: A person having origins in any of the original peoples of Europe, North Africa, or the Middle East (except those of Hispanic origin).

____ *Race/Ethnicity Unknown or Unavailable*: A person whose race or ethnic identity is either unknown or information about that person is unavailable.

____ *Other:* _____

5. Your age in years? ___ (<20) ___ (21-25) ___ (26-30) ___ (31-35) ___ (>35)

6. Your gender? ____ Female ____ Male ____ Other

7. What is your marital status?
   - ___ Married
   - ___ Never married
   - ___ Divorced
   - ___ Widowed
   - ____ Domestic partnership

8. Are you currently full time employed? ___ Yes ___ No

9. Are you working in Public Health field? ___ Yes ___ No

Thank you for your cooperation!

Table 1
Demographic characteristics of participants (N = 50)

Variable	Category	*n*	%
Gender	Female	36	72
	Male	14	28
Fulltime Student	Yes	40	80
	No	10	20
Semester	Second	34	68
	Third	7	14
	Fourth	5	10
	Fifth	4	8
GPA	3.5 to 4.0	36	72
	3.0 to 3.49	13	26
	< 3.0	1	2
Age	<20	1	2
	21-25	25	50
	26-30	18	36
	31-35	3	6
	>35	3	6
Race/Ethnicity	Black non-Hispanic	16	32
	American Indian/Native American	1	2
	Asian/Pacific Islander	26	52
	White Non-Hispanic	3	6
	Other	3	6
	Unknown/Unavailable	1	2
Marital Status	Never Married	40	80
	Married	8	16
	Domestic Partnership	2	4
Employed Full Time	Yes	12	24
	No	37	74

Table 2
Descriptive for Scale Score of Participation in Class Discussion (PCD) and Learning Experiences (LE)

Scale	N	Minimum	Maximum	Mean	SD	Skewness	Kurtosis
PCD	50	1.87	3.87	3.11	0.49	- .771	.042
LE	50	1.53	4.00	3.03	0.50	- .172	.495

Table 3
Crosstabs: GPA by Learning Style

			Learning Style Preference		
			Concrete	Abstract	Total
GPA	<3.0	Count	1	0	1
		% within GPA	100.0%	0.0%	100.0%
		Adjusted Residual	1.2	-1.2	
	3.0 to 3.49	Count	4	9	13
		% within GPA	30.8%	69.2%	100.0%
		Adjusted Residual	-.9	.9	
	3.5 to 4.0	Count	15	19	34
		% within GPA	44.1%	55.9%	100.0%
		Adjusted Residual	.5	-.5	
Total		Count	20	28	48
		% within GPA	41.7%	58.3%	100.0%

Abstract

This article provides support to flipped-classroom pedagogy in the preparation of graduate-level public health practitioners. We describe the participatory, interactive, collaborative, and liberating process of teaching and learning in the Program Planning, Implementation, and Evaluation course, and provide the results of a cross-sectional study into students' perceptions of this process. Our investigation found a significant positive correlation between students' participation in class discussion (PCD) and classroom learning experiences (LE) [Pearson, r (49) = .40, p = .004]. Study results confirm the students' appreciation for the flipped classroom pedagogy. However, the results indicate no significant correlation between the students' learning style preferences (LSP) and participation in class discussion [t (46) = -0.94, p = .34] or classroom learning experiences [t (46) = 1.64, p = .11]; likewise, there were no significant correlations between students' academic achievement (GPA) and participation in class discussion [Spearman's rho correlation: r_{sp} (49) = .07, p = .60] or classroom learning experiences [Spearman's rho correlation: r_{sp} (49) = .17, p = .25]. No significant association was found between both PCD and LE with demographic variables such as gender, age, semester in school, and type of employment. The current flipped classroom pedagogy allows for participation, growth, and development of all students enrolled in the course. We recommend more studies to further strengthen current evidence of the effectiveness of the flipped classroom pedagogical approach on both teaching and learning in public health courses.

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Word count: 3189

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The constantly changing field of public health demands knowledgeable and skillful practitioners who can contribute to the workforce as soon as they graduate from preparation programs. In response to this mandate from the field, teachers and researchers have been searching for pedagogical strategies to support and stimulate the meaningful acquisition of knowledge and skills.

Many educators find a need for and some report success in departing from traditional lecturing and substituting it with experiential and problem-based learning opportunities across disciplines in both undergraduate and graduate-level classes. (Alves, Leao, Moreira, & Teixeira, 2018; AlZahrani, 2015; Austin, 2016; Baepler, Walker, & Driessen, 2014; Findlay-Thompson & Mombourquette, 2014; Goodwin & Miller, 2013; Paristiowati, 2017). One such strategy, which has not been sufficiently studied but has enjoyed success, is called *a flipped classroom* or *reversed classroom* (Goodwin & Miller, 2013; Hwang & Lai, 2017; Jeong & Gonzalez-Gomez, 2016; McLaughlin et al., 2013; McLaughlin et al., 2014; Nguyen, Yu, Japutra, & Chen, 2016; Peterson, 2016; Simpson & Richards, 2015). This pedagogical method is broadly defined, lacking a single name or clearly defined features. According to Galway, Corbett, Takaro, Tairyan, and Frank (2014), the flipped classroom is a type of blended learning, where in-class learning is integrated with online learning opportunities, such as lecture videos posted before class sessions. Nguyen, Yu, Japutra, and Chen (2016) write that the *reversed classroom* leads to more meaningful student-teacher interaction in the classroom, and is oriented toward the learner's needs unlike traditional lecturing. Similarly, McLaughlin et al. (2014) refer to flipped-classroom instruction as a student-centered process allowing for active participation in class

activities and learning. In the flipped classroom the course-related materials are supplied primarily outside of the classroom (e.g., Blackboard course management system, email), while *in-class*, face-to-face time is utilized to solve problems, and to advance knowledge and skills (Galway, Corbett, Takaro, Tairyan, & Frank, 2014; McLaughlin et al, 2013; Peterson, 2016). Flipped classroom membership has been increasing in recent years (Goodwin & Miller, 2013; Simpson & Richards, 2015), and as such is emerging as a potentially effective pedagogy (Nouri, 2016; Sinouvassane & Nalini, 2016).

Furthermore, conventional teaching methods and strategies do not provide enough time for both content/theoretical presentation and hands-on activities (Turan & Goktas, 2016) during face-to-face class time, and often do not address the learning needs of all students (Jeong & González-Gómez, 2016). It is here that the flipped classroom addresses the shortcomings of lecturing because it provides opportunities for all students to participate, teach, and learn (Sun & Wu, 2016). There are additional benefits to the reversed classroom: (a) the process allows silent students who avoid participating in discussions the opportunity to actively engage through classroom scenarios (Nguyen, Yu, Japutra, & Chen, 2016); (b) the teacher's expertise is still available and can reach each student individually, and address questions and doubts in person (Goodwin & Miller, 2013); and (c) everyone in the classroom shares their knowledge and understanding in contrast to the conventional classroom (Nguyen et. al, 2015) where the instructor serves as the primary bearer of knowledge. It has also been reported that after the first ten minutes of lecture in a traditional class students' attention decreases substantially, and only 20% of the content presented during the last few minutes of the class is absorbed (McLaughlin et al, 2014). Therefore, the purpose of this study was to provide more evidence and support for employing *flipped classroom pedagogy* in the preparation of public health practitioners.

The Teaching and Learning Pedagogy in Our Classroom

Our program-planning graduate level course was purposely designed as a flipped classroom to guide students through a process of experiential learning of theoretical concepts and practical skills in public health. Our classroom represented a place for intellectual experimentation and wondering – learning from errors and self-correcting one's knowledge. Flipping the process and the roles of the student and the teacher in our classroom is supported by theoretical frameworks such as the *community of philosophical inquiry* (Gregory, 2008; Lipman, 1988; Lipman, 2003), *psychological empowerment* (Zimmerman 1955), *empowerment through participation* (Glanz, Rimer, & Lewis, 2002) with strong component of and sense of community development (Minkler & Wallerstein, 2003) in such a process; the *liberation pedagogy* (Freire, 1999) and *construction of knowledge in social context* (Vygotsky, 1978) with a *zone of proximal development* (ZPD) and *scaffolding* through class discussion. Vygotsky (1978) posits that *scaffolding* helps learners reach their maximum potential for knowledge and skill acquisition through a *ZPD* allowing them to reach their maximum competence.

Flipped classroom pedagogy supports needs-based learning and therefore is a purposeful, focused, and meaningful teaching. Indeed, the classroom discussion allows for transformation from a *banking concept* of education where students are *passive receptacles* of a teacher's or *narrator's deposits* into a process of *conscious cognition*, where the role of *teacher* is assigned to all participating in the dialogue; students in such a process become *active and conscious learners* (Freire, 1999). Such a process discourages rote memorization and instead allows for individual liberation in the process of learning, and provides the space for freedom of inquiry in the construction of knowledge. It provides opportunities for students to openly challenge their own

assumptions, to question others' perspectives, and to construct current, up-to-date knowledge and skills for public health practice (Austin, 2016).

In this course, in order to gain knowledge and skills about program planning, implementation, and evaluation, students worked throughout the semester on one of seven planning committees. The planning committees functioned as a simulation of real-world planning processes for health promotion community programs. The students had approximately two months to plan and implement their respective program.

There were class readings from a selected textbook (McKenzie, Neiger, & Thackeray, 2013) assigned for self-instruction outside the classroom that corresponded to the structured class discussion and exercises. The textbook guided the instructor through planning and teaching, and students through learning about the program-planning process. Through self-instruction outside the classroom, either individually or in their committees, students studied an established body of knowledge on the subject and explored theoretical constructs described in the selected textbook, without an initial "lecture" on the instructor's part. Then, through a structured, interactive, participatory classroom process those concepts were re-visited and examined through assigned tasks: identifying the needs for intervention; developing program mission, vision, goals, and objectives; presenting researched and summarized work on proposed interventions; reporting on initiatives for collaboration and partnerships; generating ideas for marketing, fundraising, and budgeting; discussing logistics of program implementation, evaluation strategies, etc. Any questions initiated by individual learners were addressed in the class discussion.

In addition, there were six assignments throughout the semester - one individual (epidemiologic needs assessment) and five group assignments - that were evaluated by the instructor and critiqued by the students in class. In completing those assignments, students were

required to have read the text, discussed it in their committees, and prepared a summary in the form of a PPT presentation or paper. Therefore, in preparation for in-class activities the process required individual exploration of content, followed by communication, coordination, and collaboration within the committees outside of the classroom.

Activities in the class sessions were planned by the instructor and then *conducted* by the students. The instructor participated in the process by preparing lesson plans and actively and equally participating in the discussions by asking questions, offering explanations, and providing feedback during presentations. In addition, the instructor graded individual paper and presentation, and each student received an individual grade for those, while group papers and PPT presentations were graded with single grades during the semester. During the classroom sessions, students were encouraged to freely participate, discuss theoretical concepts, share their understanding, ask questions, and provide explanations. The students' activities, classroom presence, and active participation were also noted and were part of the final grade. In addition, students were encouraged to comment on each other's work during class presentations, and at semester's end students evaluated themselves and the other members of their committee by completing a simple rubric. This process of teaching and learning is highly interactive, collaborative, and sometimes frustrating, but rewarding when the health promotion program is successfully implemented.

Method

The current study, approved by the University's Institutional Review Board, was conducted as a cross-sectional quantitative study, administered at the end of each semester using convenient sampling – invited participation from students who were enrolled in the class. The flipped classroom pedagogical approach was studied for three consecutive semesters - Spring

2016, Fall 2016 and Spring 2017 - in a graduate level Program Planning, Implementation, and Evaluation course. Surveys were administered at the end of the last class session of the course. Survey respondents were exclusively enrolled students in the course. A graduate student who was not part of the class explained study procedures and distributed survey packets; consent forms were included in the packets. To maintain anonymity and minimize bias, the instructor remained outside the classroom. The collected surveys were stored in a locked office, only accessible to members of the research team.

The *Classroom Experiences: Student Questionnaire* was designed with four sections to measure students' perceptions of the flipped classroom pedagogical approach to teaching and learning (Appendix A). On the questionnaire, Section One (I): "Participation in class discussion" measured the students' perceptions about their levels of participation in class discussion using the Likert scale with a possible composite score of 15-60. This section was comprised of 15 Likert-type items. Section Two (II): "The way of learning" measured students' learning styles, using a series of 12 Learning Style Inventory (LSI) items (Kolb, 1999). The LSI uses these questions to describe the ways an individual learns and deals with situations on a day-to-day basis. Section Three (III): "Learning experiences" was designed to describe the classroom learning experiences using 17 Likert-type items. In Section Four (IV) we collected demographic information about the participants such as age, gender, and employment status.

Over the course of three semesters, 65 students enrolled in the course were invited to participate in the study. All participants agreed to participate in this study by voluntarily signing a consent form and completing a survey; a pen was given as an incentive to those who participated in the study. Those who declined to participate returned the packets. The SPSS

version 24 was used to analyze the data. T-test, Pearson correlation, and regression analysis were used to test the hypotheses.

Results

Fifty students participated in this study: 36 females (72%) and 14 males (28%). The majority of the participants were between the ages of 21 and 25 (n = 25, 50%), never married (n =40, 80%), and fulltime students (n = 40, 80%). Complete demographic data is available in Table 1.

(Insert Table 1 about here)

Scales were computed by averaging the 15 "Participation in class discussion" items in Section I, and by averaging the 17 "Learning experiences" items in Section III. Descriptive statistics for the two scales are presented in Table 2. Means show that on average participants rated themselves as participating *sometimes* (3 = *sometimes*, 4 = *often*), and *agreeing somewhat* on the Learning Experiences scale (3 = *agree somewhat*, 4 = *agree strongly*). The range shows that a wide range of scores was obtained, and the skew and kurtosis being between (1) and (-1) demonstrate that the data are normally distributed. Reliability for the two scales was computed using Cronbach's alpha. Good reliability was found for both scales, with "Participation in class discussion" (PCD) achieving an alpha of .86 and "Learning experiences" (LE) achieving an alpha of .83. Learning styles were assessed and participants were categorized as either *concrete preference* (n = 20, 41.7%) or *abstract preference* (n = 28, 58.3%) learners. Two participants had missing data on this measure.

(Insert Table 2 about here)

ANOVAs, t-tests, and Spearman correlations were conducted to determine whether "Participation in class discussion" (PCD) or "Learning experience" (LE) scores were associated

with demographic variables. Demographic variables included gender, age, semester in school, marital status, full-time or part-time enrollment status, whether a student worked fulltime or not, and GPA. None of these variables were associated with PCD scores or with LE scores. Chi-Square analyses were conducted to determine whether these demographic variables were associated with learning style preference. None of the Chi Square showed significant results.

Hypothesis One (students with a concrete learning style preference would show greater PCD and LE scores) was tested using two independent sample *t* tests. No significant difference was found on PCD scores between concrete ($M = 3.05$, $SD = 0.56$) and abstract ($M = 3.19$; $SD = 0.43$) learning preference, $t\ (46) = -0.94$, $p = .34$. Similarly, no difference was found between concrete ($M = 3.19$, $SD = 0.49$) and abstract ($M = 2.95$; $SD = 0.50$) learning preferences on LE scores: $t\ (46) = 1.64$, $p = .11$.

Hypothesis Two (there is a positive association between PCD and LE) was tested using a *Pearson correlation*. A significant positive association was found: $r\ (49) = .40$, $p = .004$. The effect size was moderate, with 16% of the variance in the two scales being shared.

Hypothesis Three (there is a positive association between GPA and Learning Experiences) was tested using a Spearman's rho correlation as GPA was coded using ranked data. The correlation was not significant, $r_{sp}\ (49) = .17$, $p = .25$, and the effect size was small, with only 2.9% of the variance being shared.

(Insert Table 3 about here)

Similarly, an additional question: Is there an association between GPA and "Participation in class discussion" (PCD) scores, was tested using a Spearman's correlation, and found not significantly associated, $r_{sp}\ (49) = .07$, $p = .60$. The effect size was small with shared variance being only 0.4%.

Discussion

In spite of a small sample size, results of the present study confirmed the students' appreciation for and enthusiasm about the flipped classroom pedagogy, bolstering the instructor's confidence in the efficacy of teaching and learning in this graduate course in public health. The discussion process was conducive to learning and growth as proposed by hypothesis 2: increased participation in classroom discussion (Table 2) will have a strong association with more meaningful experiential class experiences. Through discussion, unclear concepts are often revealed and clarified (Appendix A – Section I & Section III). With these findings we contribute to a consensus of those who argue that the flipped classroom pedagogical strategy is more beneficial than the conventional one-way classroom process for all learners (Goodwin & Miller, 2013; Jeong & González-Gómez, 2016; McLaughlin et al., 2014; Peterson, 2016; Sinouvassane & Nalini, 2016).

As designed, our study sought to explore the students' perceptions of these teaching/learning experiences. The results, as anticipated, confirm the hypothesis that participation in class discussion (PCD) correlates with positive learning experiences (LE), and support findings about elsewhere reported students' perceptions (Peterson, 2016; Sinouvassane & Nalini, 2016), and students' increased self-efficacy and improved learning achievement (Hwang, & Lai, 2017). Although we cannot confirm causality between PCD and LE, our results concur with the process of empowerment through community building: participation and relevance, issues selection, and critical consciousness (Glanz at al, 2002; Minkler & Wallerstein, 2003). Such an interactive process also allows students to critically evaluate the classroom environment (Zimmerman, 1995) with greater awareness of the process, as a positive and safe space, and as a result they are more likely to repeat a similar behavior thereafter.

As we embark on the task of preparing a competent public health workforce, our path is guided, supported, and reinforced by credentialing bodies nationally (National Board of Public Health Examiners, 2016; National Commission on Health Education Credentialing, 2015), and an accreditation agency (King, 2015), whereby standards of competence and practice are set. Since proficient preparation of the public health workforce leads to advancement in practice outcomes and improvement in population health (Simpson & Richards, 2015), it behooves us to improve and fine-tune this preparation as much as possible. The flipped classroom with its opportunities for skills practice builds confidence, allows for knowledge acquisition in the content area through providing a context, and teaches learning through dialogue and discussion. Our students have been reporting (unrelated to the present study) being well prepared for the CHES exam. We believe that this process prepares students for active, skillful, and confident professional engagements soon after graduation.

The fact that there is no significant correlation between learning style preference and participation in classroom discussion or learning experiences (Hypothesis 1) supports the benefit to all students of the discussion process, and its participatory, interactive, and empowering nature. Regardless of learning style preference, students participated in class discussion and inquiry on the course content in order to learn. Our assumption that students with *abstract learning preference* would not choose to talk in order to learn was not supported; there was no significant difference between learners with abstract and concrete preference in terms of participating in discussion, or in reporting positive and satisfactory learning experiences, and confirmed by the t-test (Table 3).

In addition, there was no significant correlation between GPA and classroom process learning experiences; therefore, our notion that higher-achieving students would participate more

does not stand. These findings also point to the supportive and nurturing nature of this classroom process. The results of Spearman's rho correlation with a score of r_{sp} (49) = .17, p = .25 confirmed our suppositions in the third hypothesis. The Chi Square was not significant χ^2 (N = 48, df =2) = 2.12, p = .35. There were some small cell counts that led to a large number (33.3%) of cells with expected frequency less than 5; therefore, this p value may be overly conservative. Examination of the adjusted residual scores (Table 3) shows that there is indeed no significant association. The effect size is given by the contingency coefficient φ = .20, which is considered small to medium, and is interpreted similar to a correlation coefficient so that 4% of the variance is shared. There was no correlation found between GPA and learning style preferences, concrete or abstract. Again, our assumption that perhaps higher-achieving students with concrete learning style preference would choose to participate in discussion and engage more in the process was not supported. This finding further corroborates the premise that this process of classroom instruction is supportive of learning and is conducive to exploration and self-correction in terms of one's own understanding of concepts.

Conclusions and Implications for Research and Practice

Based on our study, the flipped classroom pedagogy (structured as illustrated above) can be considered an inclusive teaching/learning method, where everyone participates in the process of teaching and learning about program planning, implementation, and evaluation in public health. The strong positive correlation between participation in classroom discussion and learning experiences supports the empowering nature of this participatory process. The flipped classroom pedagogy encourages students to participate in class discussion and contribute to the meaningful construction of knowledge in a social context. With the present study, we contribute to the body of knowledge and add value to the application of the flipped classroom

teaching/learning strategy in graduate-level professional preparation. At the same time, more qualitative and quantitative studies will strengthen the evidence of the effectiveness of this pedagogical approach to both teaching and learning.

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